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THE ELM TWIG-GIRDLER (*ONCIDERES CINGULATUS* SAY).

BY PERCY J. PARROTT, OF MANHATTAN.

Read before the Academy October 28, 1897.

Of the insects attacking the elms of this state the *Oncideres cingulatus* is, perhaps, the most interesting if not the most injurious. To all appearances it seems to be gradually increasing in numbers and destructiveness. Although it is called the elm twig-girdler, its attacks are not confined to the elms, since it does considerable damage to the oak, persimmon, and basswood.

The injury to the trees consists in the girdling and cutting of twigs and small branches, so that, sooner or later, they fall to the ground, either of their own weight or through the influence of the wind. By the excessive pruning they receive the elms become scraggy and unsymmetrical. The insect's capacity for doing damage will be more apparent either after a storm, when the ground beneath the trees will be strewn with a large number of branches, or during the winter months, when the large number of decaying stubs can readily be seen.

The girdling of the twigs is the work of the adult female; and it is of such an unusual character that it is scarcely to be wondered that many are misled as to the cause of it. The male, partly to satisfy his hunger and partly from his destructive habits, busies himself with barking small offshoots of the branch to be severed or the overlapping twigs of neighboring branches. This work serves a good purpose, as it hastens the dying of the twig, which must be brought to a state of decay for the ensuing larvæ.

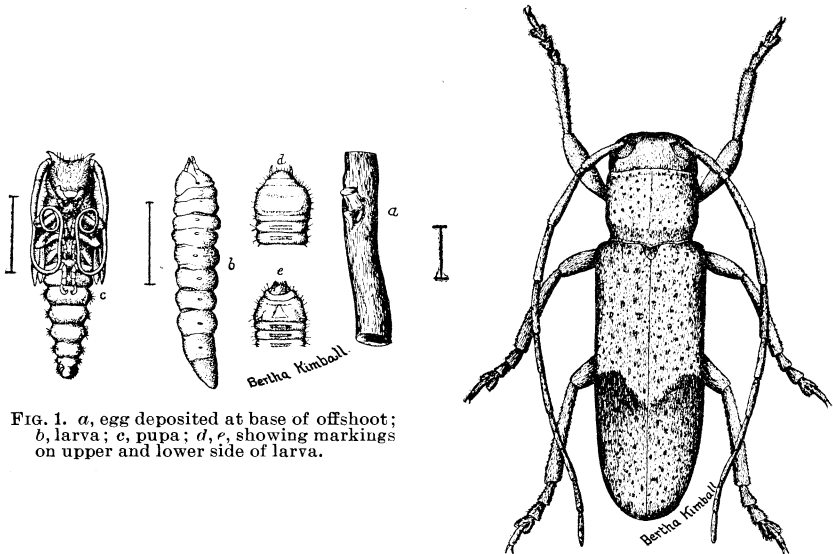


FIG. 1. *a*, egg deposited at base of offshoot; *b*, larva; *c*, pupa; *d, e*, showing markings on upper and lower side of larva.

FIG. 4. *Oncideres cingulatus* (adult).

The adults are of a brownish-gray color, with a brownish colored band across the elytra, which are dotted with numerous tawny spots. They vary from seven- to nine-sixteenths of an inch in length—the males being smaller than females. About the 1st of August the beetles gnaw a hole through the bark of the channel in which they have passed their earlier stages and escape. Upon alighting on



FIG. 2. *a*, girdling of twig;
b, *c*, channels of larvæ.

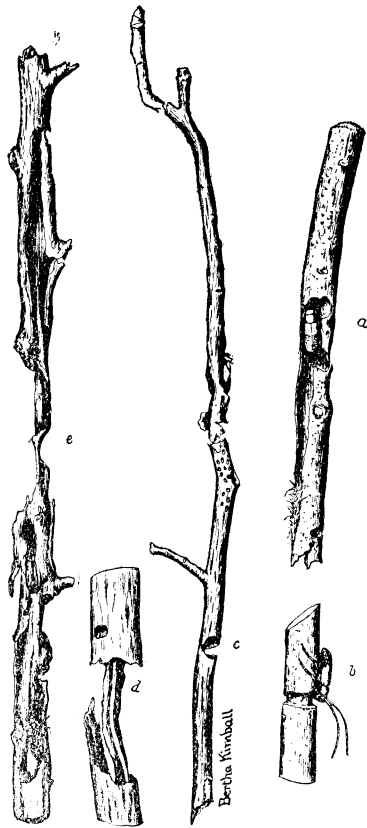


FIG. 3. *a*, bark removed, showing adult just emerging from pupa; *b*, adult girdling; *c*, hole through which adult has emerged; *d*, *e*, bark removed, showing work of larvæ.

an elm the female selects a twig or a small branch which she at once commences to girdle. Thrusting the tips of her mandibles into the woody tissue, she commences a series of cutting and tearing, prying first with one mandible and then with the other till a small shaving or splinter is raised, which she severs with one movement of her mandibles. Thus taking section by section on the same circumference she in time completely girdles the twig, which will soon fall to the ground. It is during the process of cutting that the eggs are laid. After cutting one section the female either takes another one or passes up the branch to deposit an egg. Upon returning to work she continues to girdle, cutting in the same manner as with the first section. After cutting several sections she deposits another egg or in some instances goes over the work that has been done.

In depositing an egg, the girdler first makes a hole just below an offshoot or an aborted bud of the main stem of the branch to be severed. Within this hole she deposits one egg. To protect and to disguise the egg, she caps the hole with a gummy substance. The time consumed in depositing the egg, including the cutting and sealing of the hole, is from ten to twelve minutes.

The egg is of a whitish color, of an elongated oval shape, being about four

times as long as broad. Usually but one egg is deposited at the base of an offshoot, though often four or five are deposited, not only below but at the side of and above the offshoot. The number of eggs deposited in one branch varies from one to a dozen, and even higher. The eggs laid during the summer hatch in less than two weeks, but those laid late in the fall often take longer. In many instances the larvæ do not emerge from the latter till spring.

The larvæ are whitish in color, with the mouth-parts tinged with brown. During the winter months they remain in a dormant state, but as soon as the warm days of spring appear they commence to make rapid growth. The moisture of the winter months has brought the interior wood of the twig to a proper state for the larvæ to devour. The larvæ now commence to burrow. They gradually excavate a channel from the point where the egg is deposited. This they lengthen and broaden, but always leaving the bark intact. As a rule, two successive offshoots on the same side of the twig form the termini for one channel. In twigs containing a large number of larvæ scarcely anything will be left beyond a thin covering of bark and thin, irregular partitions within, which separate the larvæ. About the middle of July the larvæ, having blocked up all openings and cracks and the ends of their channels, pass into the pupal stage, which lasts for about two weeks, when the adults appear.

As they are approaching maturity, the larvæ seem to be especially active. It is at this stage of their development that a peculiar clicking sound is to be noticed, particularly so if the infested twigs are brought into a quiet room. One unacquainted with the habits of the insect would not unlikely mistake the noise for the ticking of watches. To produce the sound, the larvæ hold the posterior part of their bodies in a rigid position by means of sharp spines which they thrust into the sides of their channels, while they sway the anterior part from side to side, catching the tips of their mandibles into the woody tissue. This seems to be a quicker method for cutting the small shavings and splinters which are necessary to fill all openings into the channels.